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No. 105, Original

In The

Supreme Court of the United States

STATE OF KANSAS,

Plaintiff,

v.

STATE OF COLORADO,

Defendant,

and

UNITED STATES OF AMERICA,

Defendant-Intervenor.

REPLY BRIEF FOR KANSAS OPPOSING THE EXCEPTIONS OF COLORADO

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REPLY BRIEF FOR KANSAS OPPOSING THE EXCEPTIONS OF COLORADO

SUMMARY OF ARGUMENT

Early in its brief Colorado emphasizes that water is a scarce resource in the West, that disputes over water have propelled the development of new legal doctrines and institutions, and that ongoing disputes likely will only heighten the need for clear remedies in this field of law. This emphasis on the importance of a clear remedy in an interstate water dispute makes for a peculiar introduction to a brief urging this Court to withhold a remedy for all but a small fraction of the injury that Kansas and its water users undisputedly suffered. In its own words, Colorado would have this Court reject as unfair "[a]n award of money damages that includes all losses that have occurred as a result of Compact violations, including losses suffered by individual water users in Kansas." Brief in Support of Colorado's Exceptions to the Third Report of the Special Master 9 ("Colo. Brief"). Kansas' reply can be summed up in a single sentence: Kansas should receive a complete remedy for its losses, no more and no less.

Colorado has filed four exceptions to the Third Report of the Special Master. The first exception opposes the Special Master's recommendation that the losses of Kansas water users be accounted for in determining Kansas' damages for Colorado's violations of the Arkansas River Compact. Colorado overlooks the fact that in the plan of the convention it surrendered its immunity to proper original actions such as this one. Both this Court's Eleventh Amendment jurisprudence and the Arkansas River Compact confirm that this action is proper.

Colorado raises two further exceptions, and focuses three separate points of its brief, on the subject of prejudgment interest. Its several arguments are united, however, by a common premise, which is that an injured party's compensation should be reduced or denied where the breaching party has acted in good faith. This premise is contrary to the Court's modern decisions. Full compensation is not punitive; it is the fair and equitable outcome. Because Colorado's second and third exceptions run afoul of this basic proposition, they should be overruled.

Colorado's fourth exception asks the Court to delve into the Special Master's analysis of the evidence from experts in the fields of engineering, economics and agronomy regarding crop losses caused by Colorado's Compact violations in canal irrigation service areas where farmers could not replace the shortfall in surface water supplies with groundwater because they had no wells. Colorado asks that the mere possibilities raised by its arguments be exalted over the solid evidence presented by the Kansas experts. The thorough analysis performed and explained by the Special Master should therefore be sustained.

I. THE ELEVENTH AMENDMENT IS NO BARRIER TO KANSAS' CLAIMS IN THIS PROPER ORIGINAL ACTION.

The Special Master recommended that the Court confirm his ruling "that if a remedy includes money damages, the Eleventh Amendment does not preclude damages awarded to the State of Kansas from being based, in part, upon losses incurred by its water users."

1 Third Report of Special Master 119 (¶ 3) ("Third Report"). Colorado excepts to this recommendation on the ground that the Eleventh Amendment bars a state from recovering money damages in a quasi-sovereign capacity based on losses to its water users. Colo. Brief 10-24. Colorado's argument fails for at least three reasons: *first*, Colorado, in the plan of the convention, surrendered its immunity to suits such as this one between sister States; *second*, the plain language of the Arkansas River Compact establishes Kansas' sovereign right to bring suit against Colorado to protect its own interests, which include the interests of its water users; and, *third*, the Court's decisions likewise establish that Kansas' suit properly seeks to vindicate its sovereign and quasi-sovereign interests rather than the purely personal claims of its citizens.

A. Colorado Surrendered Its Immunity to Suit by a Sister State in the Plan of the Convention.

When this Court granted Kansas leave to file a complaint, it implicitly determined that this is a proper original action. *Kansas v. Colorado*, 475 U.S. 1079 (1986). The Special Master considered the Court's determination to be dispositive of any objection based on the Eleventh Amendment. He explained "that if the Court accepts a case between states as one involving sovereignty or quasi-sovereignty, it is then regarded, in law, strictly as state litigation, and the 11th Amendment is not a factor." 2 Third Report, App. 36. He particularly emphasized this Court's pronouncement in *Texas v. New Mexico*, 482 U.S. 124 (1987), that "[i]n *proper original actions, the Eleventh Amendment is no barrier, for by its terms, it applies only to*

suits by citizens against a State." Id., at App. 35 (quoting *Texas v. New Mexico*, 482 U.S., at 130) (Special Master's emphasis).

A proper suit between sister States is indeed outside the ambit of the Eleventh Amendment. *Blatchford v. Native Village of Noatak*, 501 U.S. 775, 782 (1991); *Principality of Monaco v. Mississippi*, 292 U.S. 313, 328-329 (1934); *Rhode Island v. Massachusetts*, 12 Pet. 657, 720 (1838). The Eleventh Amendment confirms the presupposition that the States, upon entering into the Union, generally retained the immunity to suit enjoyed by sovereigns. *Alden v. Maine*, 119 S.Ct. 2240, 2246-2247 (1999). One of a few distinct classes of cases in which the States do not retain immunity, however, is where there has been " 'a surrender of this immunity in the plan of the convention.' " *Id.*, at 2248 (quoting The Federalist No. 81); *Idaho v. Coeur d'Alene Tribe*, 521 U.S. 261, 267 (1997). The States surrendered their immunity to suit by sister States in this Court to afford an adequate means of settling their disputes peacefully and without resort to the traditional methods of diplomacy and war, which were deemed impracticable. *Alfred L. Snapp & Son v. Puerto Rico, ex rel., Barez*, 458 U.S. 592, 601 (1982); *Kansas v. Colorado*, 206 U.S. 46, 97 (1907). This Court has explained:

> "The establishment of a permanent tribunal with adequate authority to determine controversies between the States, in place of an inadequate scheme of arbitration, was essential to the peace of the Union. The Federalist, No. 80; Story on the Constitution, § 1679. With respect to such controversies, the States by the adoption of the Constitution, acting 'in their highest sovereign capacity, in the convention of the people,'

> waived their exemption from judicial power. The jurisdiction of this Court over the parties in such cases was thus established 'by their own consent and delegated authority' as a necessary feature of the formation of a more perfect Union." *Principality of Monaco v. Mississippi*, 292 U.S. 313, 328-329 (1934) (quoting *Rhode Island v. Massachusetts*, 12 Pet. 657, 720 (1838)).

By consenting to this Court's "complete judicial power to adjudicate disputes among them," this Court acquired "the capacity to provide one State a remedy for the breach of another." *Texas v. New Mexico*, 482 U.S., at 128 (citing *Rhode Island v. Massachusetts*, 12 Pet. at 720). And with regard to interstate compacts, in particular, this Court has affirmed its readiness both to rectify a breaching State's past failure to perform and to order its future performance. *Ibid.*

Colorado nevertheless argues that the Eleventh Amendment bars the damages sought by Kansas insofar as they are based on losses to its water users. It bears emphasizing that Kansas seeks to recover simply the value of the waters of the Arkansas River that Colorado has failed to deliver in breach of the Compact. That recovery is measured in part by injury to the interests of Kansas as a State, and in part by the income lost or cost incurred by Kansas water users (such as lost crop yields and increased well-pumping costs) as a result of Colorado's breach. See, *e.g.*, 1 Third Report 36, 64. Kansas believes that to restore that value to it is in no sense to sanction a recovery on individual claims, but simply to afford Kansas a complete remedy for the Compact breach. Colorado contends, however, that to recognize such a remedy is to allow Kansas "to present and enforce the

claims of its citizens." Colo. Brief 13 (capitalization omitted).

The Special Master properly rejected the notion that Kansas is asserting personal, private claims of its citizens. 2 Third Report, App. 21. He noted that a State properly represents the water claims of its people in an interstate controversy, just as a State's undertakings in an interstate compact are binding on its water users. *Id.*, at App. 32 (citing *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 106 (1938); *Wyoming v. Colorado*, 286 U.S. 494, 508-509 (1932)). Both the language of the Arkansas River Compact and this Court's Eleventh Amendment jurisprudence establish that Kansas has brought a proper original action between sister States rather than the private claims of its individual citizens.

B. The Arkansas River Compact Establishes Kansas' Sovereign Right to Bring Suit Against Colorado to Protect Its Own Interests, Which Include the Interests of Its Water Users.

The Compact, which after all is a contract between Kansas and Colorado, *Texas v. New Mexico*, 482 U.S., at 128, is the obvious starting point in an analysis of the rights and duties that Kansas can enforce in this case. Indeed, Colorado itself recognizes that the applicability of the Eleventh Amendment should be analyzed on the basis of the "nature and origin of the claims on which damages are based." Colo. Brief 23. It is curious, then, that Colorado's Eleventh Amendment argument hardly mentions the Compact, the one document that directly

defines the nature and origin of Kansas' claims. *See id.*, at 21-22, 24.

The Compact's plain language leaves no doubt but that Kansas is authorized to enforce both its rights as a State and the rights of its water users. Most explicitly, Article VII-A provides that "[e]ach State shall be subject to the terms of this Compact" and then adds:

> "Where the name of the State or the term 'State' is used in this Compact these shall be construed to include any person or entity of any nature whatsoever using, claiming or in any manner asserting any right to the use of the waters of the Arkansas River under the authority of that State." Art. VII-A, reprinted in the Appendix to the Brief in Support of Kansas' Exception to the Third Report of the Special Master, filed November 24, 2000 ("Kan. Brief") A-10 to A-11.

If Colorado is subject to the Compact's terms, and "Kansas" is construed to include all persons using, claiming, or asserting the right to use waters of the Arkansas River under Kansas' authority, it follows that Kansas may assert the rights of its water users as against Colorado.

If there were any doubt about the import of Article VII-A, moreover, the compacting parties made their intent clear in other provisions of the Compact. For example, in the key provision that Colorado has breached, Article IV-D, the States made the same explicit undertaking to protect the interests of each State's water users. The provision states in part that the waters of the Arkansas River "shall not be materially depleted in usable quantity or availability *for use to the water users* in

Colorado and Kansas under this Compact" by beneficial development or construction occurring after the Compact's execution. Art. IV-D, Kan. Brief A-5 (emphasis added). Thus, the very standard of compliance set by the Compact is defined in terms of detrimental effects on *water users* in Kansas.

Similarly, in Article I-A, the States specified that one of the major purposes of the Compact is to:

> "Settle existing disputes and remove causes of future controversy between the States of Colorado and Kansas, and between citizens of one and citizens of the other State, concerning the waters of the Arkansas River and their control, conservation and utilization for irrigation and other beneficial purposes." Art. I-A, Kan. Brief A-1.

Plainly, the only enforceable means of removing causes of controversy between the citizens of the respective States, short of involving massive classes of individual citizens, is to give effect to Article VII-A's provision that each State represents its citizens.

To the same effect is Article II, which recites that the Compact is based in part on this Court's opinion in *Colorado v. Kansas*, 320 U.S. 383 (1943). Art. II, Kan. Brief A-2. *Colorado v. Kansas*, was, in this Court's words, a suit "between Kansas or her citizens, and Colorado, or her citizens, concerning their respective rights to the beneficial use of the waters of the Arkansas River." 320 U.S., at 384. Colorado sought, and this Court granted, an injunction barring individual water users in Kansas from prosecuting claims against water users in Colorado. *Id.*, at 388-391. Kansas counterclaimed, praying that the Court

"protect and quiet her rights *and those of her citizens and residents*" to water appropriations. *Id.*, at 388-389 (emphasis added). On the premise that Colorado was devoting water to a beneficial use, this Court framed the question presented as "whether, and to what extent, [Colorado's] action injures [Kansas] *and her citizens* by depriving them of a like, or an equally valuable, beneficial use." 320 U.S., at 393 (emphasis added). This Court elaborated that "Kansas is not entitled to relief unless she shows [Colorado's practices] clearly have entailed serious damage to her substantial interests *and those of her citizens.*" *Id.*, at 398 (emphasis added).

Although the Court recognized that Colorado's water use had increased steadily over the past several decades, it found the evidence of injury to Kansas water users insufficient to meet the heavy burden of justifying an injunction against Colorado users. The Court exhorted the States, however, to settle their differences by negotiation and agreement pursuant to the Compact Clause of the Constitution. *Id.*, at 392, 400. The Arkansas River Compact thus arose out of a dispute over whether Kansas and its water users were suffering injury at the hands of Colorado and its water users. And although this Court rebuffed attempts by Kansas water users to intervene in the dispute, the States continued to assert the interests of their respective water users in both this Court and the Compact. It is only natural, then, that the Compact's terms make the interests of each State inclusive of the interests of its water users. Art. VII-A, Kan. Brief A-10 to A-11.

Colorado brushes aside the Compact with the pat contention that its purpose is to settle disputes between

the two States, and between the citizens of the one and the citizens of the other State, but not between the citizens of one State and the other State itself. Colo. Brief 21-22. The Compact is too broad, however, to admit of such a distinction. The Compact expressly provides that the term "State" includes the State's water users. Art. VII-A, Kan. Brief A-10 to A-11. Therefore, to settle disputes between the two States is to settle disputes between one State's water users and the other State.

The Special Master observed that Kansas, as the signatory to the Compact, is the only party that properly can sue to protect the flows of the Arkansas River guaranteed for use by Kansas water users. 2 Third Report, App. 36. Although Colorado strangely questions why the Special Master believed that only Kansas can do so, Colo. Brief 24, it quickly returns to its position that the Eleventh Amendment "prevents individual water users from suing Colorado for damages," *ibid.* What Colorado fails to address, however, is why the compacting States could conceivably have intended to have left themselves without a remedy for the enormous injury to water users that a breach of the Compact could occasion.[1]

This Court said in *Texas v. New Mexico*:

> "A court should provide a remedy if the parties intended to make a contract and the contract's terms provide a sufficiently certain basis for determining both that a breach has in fact occurred and the nature of the remedy called for." 482 U.S. 124, 129 (1987) (citing Restatement

[1] Colorado itself asserts that losses to individual water users "are by far the largest losses." Colo. Brief 38.

> (Second) of Contracts § 33(2), and Comment *b* (1981)).

Here, no one questions that the parties intended to make a contract. No one questions that a breach has in fact occurred. See *Kansas v. Colorado*, 514 U.S. 673 (1995). And, as just summarized, the Arkansas River Compact's plain language, which specifies the intent to protect each State's water users from injury, makes clear that the nature of the remedy called for in this case necessarily accounts for injury to those same water users.

The clear import of the Compact might be understood to establish the propriety of Kansas' suit in either of two ways. By a straightforward reading, the compacting States recognized that each spoke for its water users and would properly represent their interests in subsequent efforts to enforce the Compact. This was the Special Master's reading, which led him to conclude that Kansas has brought a proper interstate action, pure and simple. But if one persisted, as Colorado does, in the view that a damages claim measured in part by losses suffered by individual water users is effectively a personal claim of the individuals themselves, the Compact would equally well be understood as reflecting the compacting States' consent to suit on such "individual claims." A rudiment of Eleventh Amendment jurisprudence is that "a State's sovereign immunity is 'a personal privilege which it may waive at pleasure.' " *College Sav's Bank v. Florida Prepaid Postsecondary Educ. Expense Bd.*, 119 S.Ct. 2219, 2226 (1999) (quoting *Clark v. Barnard*, 108 U.S. 437, 447-448 (1883)). In short, whether Kansas' damages claim is understood as a claim of the State measured in part by losses to its water

users or the claims of its water users presented by Kansas, the Compact plainly establishes that Kansas' suit to recover the amount of those losses is proper.

C. This Court's Eleventh Amendment Decisions Establish Kansas' Right to Bring Suit to Protect Its Sovereign Interests.

The conclusion that the Arkansas River Compact authorizes Kansas' action to enforce its water users' interests is wholly consistent with this Court's interpretation of the Eleventh Amendment. The decision on point is *Texas v. New Mexico*, 482 U.S., at 130-131, in which the Court recognized that money damages may be awarded to remedy a breach of an interstate water compact. The Court unmistakably contemplated precisely the sort of remedy that Kansas seeks here, that is, money damages based at least in part on the harm suffered by individual water users in the plaintiff State, Texas. In reaching that conclusion, the Court addressed possible objections to a money damages remedy. The Court noted:

> "It might be said that *those users who have suffered the water shortages* caused by New Mexico's underdeliveries over the years, rather than the State, should be the recipients of damages, and that they would be difficult if not impossible to identify." *Id.*, at 131-132 (emphasis added).

The Court observed, however, that an in-kind, water remedy "would also likely fail to benefit *all those who were deprived in the past.*" *Id.*, at 132 (emphasis added). Similarly, the Court took note of the suggestion that "a money judgment might find its way into the general coffers of the State, rather than benefit *those who were*

hurt." *Id.*, at 132, n. 7 (emphasis added). It responded, however, that

> "the basis on which Texas was permitted to bring this original action is that enforcement of the Compact was of such general public interest that the sovereign State was a proper plaintiff. See *Maryland v. Louisiana*, 451 U.S. 725, 735-739 (1981). It is wholly consistent with that view that the State should recover any damages that may be awarded, money it would be free to spend in the way it determines is in the public interest." *Texas v. New Mexico*, 482 U.S., at 132, n. 7.

Colorado infers from these passages that Texas could recover damages only for its representation of a general public interest exclusive of the interests of Texas water users. Colo. Brief 23. This Court plainly had a different conception of the "general public interest" in mind, however, when it addressed the need to provide a remedy on account of "those users who have suffered the water shortages," "those who were deprived in the past," and "those who were hurt." Kansas is seeking exactly the sort of remedy that the Court envisioned: A remedy to the State of Kansas measured in part by the injury to those Kansas water users who have suffered the shortages.

Prior decisions further elaborate on the distinction between a proper original action that is of general public interest and an action in which a State invokes this Court's original jurisdiction merely to advance the purely private claims of particular individuals. For example, in *Maryland v. Louisiana*, 451 U.S. 725 (1981), a constitutional

challenge of a state tax on natural gas uses, the Court explained:

> "A State is not permitted to enter a controversy as a nominal party in order to forward the claims of individual citizens. But it may act as the representative of its citizens in original actions where the injury alleged affects the general population of a State in a substantial way." *Id.*, at 737.

The plaintiff States alleged substantial injury to their own proprietary interests as purchasers of natural gas, but they also sought to remedy economic injury to individual citizens, themselves consumers of natural gas. *Id.*, at 737-739. As Colorado notes, the plaintiffs alleged economic injuries of $1.5 million to the States themselves and $120 million to individual citizens. Colo. Brief 18; see *Maryland v. Louisiana*, 451 U.S., at 736, n. 12. This Court observed, however, that the individuals in question were not "a small group of citizens who are likely to challenge the Tax directly," but were a great number of citizens who, due to lack of financial incentive or legal recourse, "cannot be expected to litigate" individually. *Id.*, at 739. The Court concluded, "In such circumstances, exercise of our original jurisdiction is proper." *Ibid.*

Colorado would distinguish *Maryland v. Louisiana*, apparently on the ground that the $120 million sought by the plaintiff States on behalf of individual citizens took the form of tax refunds rather than damages. Colo. Brief 18. A principal purpose of the Eleventh Amendment, however, was to protect against " 'prospective raids on state treasuries.' " *Alden v. Maine*, 119 S.Ct. 2240, 2250 (1999) (quoting D. Currie, The Constitution in Congress:

The Federalist Period 1789-1801, p. 196 (1997)). Inasmuch as a judgment for $120 million has the same effect on a state treasury whether denominated a refund or damages, the distinction is without significance for purposes of the Eleventh Amendment. See *Ford Motor Co. v. Department of Treasury*, 323 U.S. 459, 464 (1945) (holding that action against state for refund of allegedly unconstitutional state tax was "in essence one for the recovery of money from the state"); see also *Edelman v. Jordan*, 415 U.S. 651, 668 (1974) (holding that retroactive award of statutory benefits, although characterized as form of "equitable restitution," was "in practical effect indistinguishable in many aspects from an award of damages against the State").

Colorado also notes that, when judgment was later entered for the plaintiff States, the wrongly collected tax revenues were ordered refunded to the taxpayers individually rather than to the States. Colo. Brief 18 (citing *Maryland v. Louisiana*, 452 U.S. 456, 457 (1981)). This fact actually cuts against Colorado's argument because it underscores that the Court has exercised original jurisdiction over an action on behalf of individual citizens even where it has ultimately directed that the monetary remedy be paid directly to individuals themselves. Here, Kansas seeks merely to recover damages for itself measured in part by the injury to those who were hurt, to be spent in the way that its legislature determines is in the public interest. See *Texas v. New Mexico*, 482 U.S., at 132 & n. 7.

Colorado relies on a series of decisions in which a plaintiff State did assert purely personal claims of specific individuals, acting quite literally as their collecting agent.

For example, in *New Hampshire v. Louisiana*, 108 U.S. 76, 89 (1883), each of the two plaintiff States was "nothing more nor less than a mere collecting agent" for a few identified citizens who owned bonds on which suit was brought. Although the suits were "in the names of the States, they [were] under the actual control of individual citizens, and [were] prosecuted and carried on altogether by and for them." *Ibid.* This Court concluded, "No one can look at the pleadings and testimony in these cases without being satisfied, beyond all doubt, that they were in legal effect commenced and are now being prosecuted by the owners of the bonds and coupons." *Ibid.* Similarly, in *Oklahoma ex rel. Johnson v. Cook*, 304 U.S. 387, 395-396 (1938), the plaintiff State, acting "solely for the benefit of the depositors and creditors" of an insolvent bank, took legal title to private claims against the bank's shareholders as a "mere expedient for the purpose of collection."

And again, in *North Dakota v. Minnesota*, 263 U.S. 365, 375-376 (1923), the decision on which Colorado relies most heavily, a specific group of North Dakota farm owners were funding their State's prosecution of the suit, each individual claimant expected to share in any award of damages "in proportion to the amount of his loss," and the Court deemed the State to be acting on behalf of the claimants "as their trustee against a sister state" because it was "inconceivable that North Dakota [was] prosecuting this damage feature of its suit without intending to pay over what it thus recover[ed] to those entitled."

The Eleventh Amendment bars suits such as these because they are brought by the State in name only; in substance they are suits by individual citizens against a

State. *Alfred L. Snapp & Son v. Puerto Rico, ex rel., Barez*, 458 U.S. 592, 607 (1982). In contrast, Kansas' suit for breach of the Arkansas River Compact is not, as Colorado would have it, a mere "coupling" of private claims with the State's claim; it is not a mere expedient for the purpose of collection. As the Special Master recognized:

> "Of course, this action is no mere contrivance by Kansas to obtain damages for its water users. Rather, it is the State of Kansas that seeks damages, which it contends should be measured in part by the losses suffered by individual farmers." 2 Third Report, App. 21.

The Special Master's determination is amply supported by the nature of the interests, both sovereign and quasi-sovereign, that Kansas alone can petition to enforce.

First, in seeking enforcement of the Compact, Kansas asserts the interests of a "sovereign State." *Texas v. New Mexico*, 482 U.S., at 132, n. 7. Its demand for recognition from other sovereigns is an "easily identified" sovereign interest. *Alfred L. Snapp & Son*, 458 U.S., at 601. The classic example of one State's demand for recognition from another is a border dispute. *Ibid.*; see, *e.g.*, *Rhode Island v. Massachusetts*, 12 Pet. 657, 725 (1838). And just as a State may demand its sister State's recognition of rights in land divided by a border, so Kansas may demand Colorado's recognition of rights in interstate waters. See *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 106 (1938) (States' authority to apportion waters of interstate stream by compact, like their authority to adjust State boundaries by compact, is "a part of the general right of sovereignty") (quoting *Poole v. Fleeger*, 11 Pet. 185, 209 (1837)); *Kansas v. Colorado*, 206 U.S. 46, 97 (1907); see also

Maryland v. Louisiana, 451 U.S. 725, 766 (1981) (Rehnquist, J., dissenting) (observing that boundary disputes and disputes over water rights are examples of "the prototypical original action" involving States' "sovereign interests").

Kansas' sovereign interest in enforcing the Compact is not a private claim of any of its citizens for the simple reason that individual citizens have no such claim. As the Special Master recognized, Kansas is a signatory to the Compact, but its citizens are not. 2 Third Report, App. 36. Indeed, Colorado itself has asserted "that 'Kansas water users do not have a remedy' " and "that there is 'no way' to recover their losses.' " *Id.*, at 33 (quoting Colorado counsel's statements in oral argument); accord Colo. Brief 24 (asserting that individual water users' "claims are barred"). This is a result, moreover, that was reached at Colorado's behest. In the decision that Article II of the Compact cites as one of the bases for the Compact's provisions, this Court enjoined Kansas water users from maintaining suit to protect their interests in the waters of the Arkansas River. *Colorado v. Kansas*, 320 U.S. 383, 388, 391 (1943); see Art. II, Kan. Brief A-2.

Second, even apart from its sovereign interests as a party to the Compact, Kansas has quasi-sovereign interests that support the recovery that it seeks. One of the first decisions to recognize the concept of quasi-sovereignty was *Kansas v. Colorado*, 206 U.S. 46, 99 (1907), in which this Court, in the absence of an interstate compact, exercised original jurisdiction over the claim that Colorado had diverted excessive amounts of water from the Arkansas River. This Court explained:

> "In this respect [Kansas] is in no manner evading the provisions of the 11th Amendment to the Federal Constitution. It is not acting directly and solely for the benefit of any individual citizen to protect his riparian rights. Beyond its property rights it has an interest as a state in this large tract of land bordering on the Arkansas river. Its prosperity affects the general welfare of the state. The controversy rises, therefore, above a mere question of local private right and involves a matter of state interest, and must be considered from that standpoint." *Ibid.* (citing *Georgia v. Tennessee Copper Co.*, 206 U.S. 230 (1907)).

Contrary to Colorado's contention that Kansas' remedy cannot be based on losses to its water users, this Court took into account exactly that sort of evidence – crop yields and levels of water use based on population in areas abutting the Arkansas River – in determining whether Kansas was entitled to relief. 206 U.S., at 108-113.

This Court reached the same result in the Laramie River decisions.[2] This Court held that a State's interests in the apportionment of an interstate stream are "indissolubly linked" with the interests of its water users. 286 U.S., at 509; 259 U.S., at 468. Thus, a State's rights under an equitable apportionment decree are based on the rights of its water users. *Ibid.*; see 309 U.S., at 579-580. Here, the Special Master reasoned that, if the interests of a State's

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[2] *Wyoming v. Colorado*, 259 U.S. 419, modified, 260 U.S. 1 (1922), vacated and new decree entered, 353 U.S. 953 (1957); *Wyoming v. Colorado*, 286 U.S. 494 (1932); *Wyoming v. Colorado*, 298 U.S. 573 (1936); *Wyoming v. Colorado*, 309 U.S. 572 (1940).

water users properly form the basis of a decree apportioning water between two States, so too may they be the measure of a claim for breach of the Compact apportioning water between two States. 2 Third Report, App. 26-27, 36.

Colorado would distinguish the Laramie River decisions on the ground that, although the States' apportionments "were based on use by their respective water users, they were not the *same* as those individual claims." Colo. Brief 23-24 (emphasis in original). In fact, that formulation is an apt description of Kansas' claim for damages in this suit – it is *based* in part on uses foregone or made more expensive to its water users. Kansas' claim is not the *same* as its water users' claims for the simple reason that there are no such individual claims. Kansas, as a signatory to the Compact, is the only party with a claim for breach. Consistent with *Wyoming v. Colorado*, 309 U.S., at 575-576, Kansas seeks a determination only of the relative rights of the two sovereign States. Cf. Colo. Brief 24. Each State should address in-state considerations relating to a damages award – funding of the award in the defendant State, distribution of the award in the plaintiff State – according to its own laws. See *ibid.*; *Texas v. New Mexico*, 482 U.S., at 132, n. 7.

In sum, the Eleventh Amendment is no barrier in this proper original action because Colorado surrendered its immunity to such actions in the plan of the convention, the plain language of the Compact authorizes a remedy based on injury to Kansas' water users, and Kansas' sovereign and quasi-sovereign interests provide an additional basis for that remedy. Colorado's first exception to

the Third Report of the Special Master should therefore be overruled.

II. PREJUDGMENT INTEREST IS AN ESSENTIAL ELEMENT OF COMPLETE COMPENSATION WHETHER OR NOT THE INJURED PARTY'S CLAIM IS LIQUIDATED.

The Special Master recommended that the Court confirm his ruling "that the unliquidated nature of Kansas' claim for damages does not bar the award of prejudgment interest." 1 Third Report 119 (¶ 4). Colorado excepts to this recommendation, relying on what this Court has termed "the venerable common-law rule that prejudgment interest is not awarded on unliquidated claims (those where the precise amount of damages at issue cannot be computed)," *City of Milwaukee v. Cement Division, National Gypsum Co.*, 515 U.S. 189, 197 (1995). See Colo. Brief 25-28.

Colorado acknowledges this Court's observation in *City of Milwaukee* that "the liquidated/unliquidated distinction has faced trenchant criticism for a number of years." 515 U.S., at 197; see Colo. Brief 26. It might have added that in *City of Milwaukee* itself this Court firmly declined to adopt a rule based on the distinction. 515 U.S., at 197. But even while recognizing "a trend in recent years to allow prejudgment interest on unliquidated claims," Colorado contends that the trend has resulted "primarily" from legislative action. Colo. Brief 26. It suggests that when Congress has decided to allow interest on unliquidated claims, it has counterbalanced that remedy with restrictions on liability. *Id.*, at 26-27. It contends that

in this case, in which no statute governs the question, interest should be denied because "there is no time limitation on actions for violation of an interstate compact" and for many years it was difficult for Colorado to detect that it was breaching the Compact. *Id.*, at 27-28.

In fact, Colorado's distinction between statutory and common-law grounds for allowing interest has fared no better than the liquidated/unliquidated distinction. *City of Milwaukee*, in which this Court most recently declined to apply the distinction, was an admiralty case. This Court noted that, in contrast with 28 U.S.C. § 1961, which governs awards of postjudgment interest in most federal court litigation, there is no comparable statute governing the award of prejudgment interest. 515 U.S., at 194. The Court commented:

> "Far from indicating a legislative determination that prejudgment interest should not be awarded, however, the absence of a statute merely indicates that the question is governed by traditional judge-made principles." *Ibid.*

The Court took the same approach in *West Virginia v. United States*, 479 U.S. 305 (1987), where this Court affirmed the award of prejudgment interest against a State as an element of damages for breach of contract:

> " 'In the absence of an applicable federal statute, it is for the federal courts to determine, according to their own criteria, the appropriate measure of damage, expressed in terms of interest, for nonpayment of the amount found to be due.' " *Id.*, at 308-309 (quoting *Royal Indemnity Co. v. United States*, 313 U.S. 289, 296 (1941)).

These decisions contradict Colorado's suggestion that legislative silence is an implicit endorsement of one substantive rule or another regarding prejudgment interest.

Colorado asserts that in *General Motors Corp. v. Devex Corp.*, 461 U.S. 648 (1983), this Court recited the common-law rule against interest on unliquidated damages and "would presumably have followed [that rule] in the absence of a statutory change" in 1946. Colo. Brief 27, n. 7. The *General Motors Corp.* decision itself, however, dispels the notion that this Court, in 1983, would have endorsed the traditional rule:

> "The traditional view, which treated prejudgment interest as a penalty awarded on the basis of the defendant's conduct, has long been criticized on the ground that prejudgment interest represents 'delay damages' and should be awarded as a component of full compensation." 461 U.S., at 655, n. 10.

Indeed, in the wake of *City of Milwaukee*, Colorado's view is even more untenable since the Court has expressly declined "to adopt" such a rule. 515 U.S., at 197.

Moreover, this Court has particular latitude in the exercise of its original jurisdiction to fashion substantive rules bearing on interest. Thus, in *Texas v. New Mexico*, 482 U.S. 124, 132, n. 8 (1987), the Court rejected the defendant State's argument that the Court lacked power to allow postjudgment interest absent statutory authority to do so. Acknowledging the rule of *Pierce v. United States*, 255 U.S. 398, 406 (1921), that postjudgment interest may not be awarded absent statutory authority, this Court ruled that "we are not bound by this rule in exercising our original jurisdiction." 482 U.S., at 132, n. 8.

Inasmuch as federal courts, and in particular this Court in original actions, allow prejudgment interest "according to their own criteria," *West Virginia v. United States*, 479 U.S., at 308, the question raised by Colorado's exception is whether this case presents any reason more compelling than *City of Milwaukee* did for adopting a rule barring interest on unliquidated claims. Colorado has pointed to no such reason.

Colorado asserts its good faith, arguing that it was ignorant that it was breaching the Compact over much of the time that it was underdelivering water to Kansas because depletions to usable Stateline flows were difficult to detect and quantify. Colo. Brief 28. *City of Milwaukee* holds, however, that a defendant's good-faith dispute of its liability has little bearing on whether to award prejudgment interest, because interest is awarded as an element of full compensation, not as a penalty for bad-faith conduct. *City of Milwaukee*, 515 U.S., at 197. Indeed, it was precisely the defendant's plea of good faith that prompted the Court to address the common-law rule barring interest on unliquidated claims – and to affirm its unwillingness to adopt such a rule. *Ibid.*

The Court also made clear that the rationale for its ruling is not confined to admiralty law. It explicitly noted that other cases, including a contract case against a State, have recognized the compensatory purpose of prejudgment interest. *Id.*, at 195, n. 7 (citing, among other cases, *West Virginia v. United States*, 479 U.S. 305, 310-311, n. 2 (1987)). It added that a good-faith dispute as to liability, far from a circumstance so extraordinary as to justify withholding compensation, is common to most litigation:

> "In sum, the existence of a legitimate difference of opinion on the issue of liability is merely a characteristic of most ordinary lawsuits. It is not an extraordinary circumstance that can justify denying prejudgment interest." *Id.*, at 198.

The Court concluded that "uncertainty about the outcome of a case should not preclude an award of interest." *Id.*, at 197; accord *Texas v. New Mexico*, 482 U.S., at 129 (observing that two special masters had recognized that defendant State had acted in good faith, but ruling that "good-faith differences about the scope of contractual undertakings do not relieve either party from performance"); *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655, n. 10 (1983) (recognizing criticism of traditional view treating interest "as a penalty awarded on the basis of the defendant's conduct"); *Anadarko Petroleum Corp. v. FERC*, 196 F.3d 1264, 1268 (D.C. Cir. 1999), modified on other grounds, 200 F.3d 867 (D.C. Cir.) (per curiam), cert. denied, 120 S.Ct. 2215 (2000). Colorado has offered no reason why its assertions of good faith should carry more weight in this case than those of the defendants in other recent cases.

Colorado also argues that "there is no time limitation on actions for violation of an interstate compact," suggesting that it is unfair to award interest against a defendant when much time has passed. Colo. Brief 28. Whether in fact there is no such time limitation is debatable, inasmuch as the Court has not ruled out the applicability of laches as just such a limitation. See *Kansas v. Colorado*, 514 U.S. 673, 687-688 (1995). More to the point, however, this Court's decisions certainly do limit prejudgment

interest where the plaintiff is responsible for " 'undue delay in prosecuting the lawsuit.' " *City of Milwaukee*, 515 U.S., at 196 (quoting *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657 (1983)); *West Virginia v. United States*, 479 U.S., at 311, n. 3. Thus, this Court's precedents hardly leave an unsuspecting defendant at the mercy of the plaintiff who treats a lawsuit as an investment opportunity. When the plaintiff is not responsible for delay, on the other hand, the passage of time is not a reason to *deny* the plaintiff interest; on the contrary, it is the very reason to *award* interest. *Anadarko Petroleum Corp.*, 196 F.3d at 1268; *In re Milwaukee Cheese Wis., Inc.*, 112 F.3d 845, 849 (7th Cir. 1997); *In re Oil Spill by the Amoco Cadiz*, 954 F.2d 1279, 1331, 1334 (7th Cir. 1992) (per curiam). Here, of course, this Court has concluded that Kansas was not guilty of inexcusable delay in bringing suit. *Kansas v. Colorado*, 514 U.S. 673, 689 (1995).

In sum, the Court found no reason in *City of Milwaukee* to resurrect the distinction between liquidated and unliquidated claims, and Colorado has presented no reason for doing so here.

III. KANSAS' COMPENSATION SHOULD NOT BE WITHHELD ON THE THEORY THAT COLORADO BREACHED THE COMPACT IN GOOD FAITH.

As stated above, the Special Master recommended that the Court confirm his ruling that an award of money damages to Kansas may be based in part on losses incurred by Kansas water users. 1 Third Report 119 (¶ 3). He further recommended that Kansas' damages should

include prejudgment interest, "but only from 1969 to the date of judgment," when Colorado knew or should have known of its breach of the Compact; and Kansas' damages during the period 1950-1968 should be adjusted only for inflation. 1 Third Report 107, 120 (¶ 8); see *id.*, at 103. For the reasons stated in Kansas' Brief in Support of Kansas' Exception to the Third Report of the Special Master, filed November 24, 2000, Kansas believes prejudgment interest should not be limited to the period when Colorado knew or should have known that it was violating the Compact, but should be awarded as necessary to afford Kansas full compensation.

Colorado, however, takes a position more radical than the Special Master's. In excepting to the Special Master's recommendations, it argues both that (1) prejudgment interest should be denied for the period 1950-1984 on account of Colorado's uncertainty over whether it was in breach and (2) Kansas' damages should be further reduced by "some fair percentage" to reflect Colorado's uncertainty. Colo. Brief 37. In short, Colorado's position is that it would be "fundamentally unfair" to compensate Kansas for all of its injury. Colo. Brief 28 (capitalization omitted).

While Colorado's argument is lengthy and elaborate, the entire discussion rests on the proposition that "factors in extenuation" should be considered in determining both the amount of Kansas' damages and whether Kansas should receive any prejudgment interest. *Ibid.* By factors in extenuation, Colorado means its own asserted ignorance of its Compact violations, which it takes pains to show by describing the difficulty of determining the effect of groundwater well pumping on usable stateline

flows. *Id.*, at 28-37. Simply stated, Colorado asserts that it was acting in good faith when it breached the Compact. This Court has previously found that the evidence of Colorado's Compact violations available to Kansas was "vague and conflicting." *Kansas v. Colorado*, 514 U.S. 673, 689 (1995). Colorado invokes this finding to argue that, if the evidence of its breach was too equivocal to hold Kansas guilty of inexcusable delay in bringing suit, then it is likewise too equivocal to hold Colorado liable to compensate Kansas fully for the breach. Colo. Brief 29-30, 37.

Colorado's entire argument is misdirected, however, because its premise is incorrect. Although "factors in extenuation" may be relevant to a punitive remedy, they are not relevant to the question of whether a party should be compensated for its injury. It is telling that Colorado's argument on this point fails to acknowledge this Court's decisions in *Texas v. New Mexico* and *City of Milwaukee*.

In *Texas v. New Mexico*, this Court rejected New Mexico's argument that it should be relieved of the duty to compensate for its failure "to deliver water that it, in good faith, believed it had no obligation to refrain from using." 482 U.S., at 129. The Court in 1987 determined that New Mexico had underdelivered water over the period 1950-1983. *Id.*, at 127-128. Until 1987, however, the parties had remained at odds on the interpretation of New Mexico's obligations under the Pecos River Compact, two special masters had concluded that New Mexico was acting in good faith, and the Court did not take issue with that conclusion. *Id.*, at 129. Nevertheless, the Court firmly held that New Mexico could not escape liability for its past failures to perform under the Pecos

River Compact because "good-faith differences about the scope of contractual undertakings do not relieve either party from performance." *Id.*, at 129.[3]

In *City of Milwaukee*, this Court likewise rejected the defendant's contention that its good faith should relieve it of the duty to pay prejudgment interest. 515 U.S., at 196-197. The reason is that a defendant's good faith is not a consideration relevant to the allowance of compensation, relevant though it might be to the issue of whether to impose a penalty. *Id.*, at 197; see also *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655, n. 10 (1983).

The authority on which Colorado principally relies is *Wyoming v. Colorado*, 309 U.S. 572 (1940), a case in which Colorado had violated an interstate water delivery obligation. That case actually undermines Colorado's contention that its claims in extenuation should be considered here. See Colo. Brief 28-29. At issue in *Wyoming v. Colorado*, was whether Colorado should be adjudged in contempt of this Court's decree equitably apportioning the waters of the Laramie River. The Court concluded that

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[3] Colorado seeks to distinguish the facts of *Texas v. New Mexico* in its Summary of Argument, Colo. Brief 7, although, once having made the effort, it studiously avoids the subject in the argument itself. In light of this Court's 1987 opinion in *Texas v. New Mexico*, however, there are no material distinctions to be drawn. The very premise of the Court's holding that good faith does not relieve a party from performance is the factual proposition that New Mexico had indeed acted in good faith over an extended period of time. 482 U.S., at 127-129. Colorado's attempt to draw gradations of good faith misses the essential point that the defendant's state of mind is not relevant to the determination of whether the injured party should receive full compensation.

Colorado should not be adjudged in contempt because Wyoming arguably had acquiesced in Colorado's diversion of more than its share of the river, creating "a period of uncertainty and room for misunderstanding which may be considered in extenuation." 309 U.S., at 582. Colorado's claim in extenuation was properly considered, however, not because a judgment holding it in contempt would have been compensatory to Wyoming, but precisely because it would not, as described below. See *id.*, at 581-582.

This Court has recognized a distinction between a contempt citation that is remedial (or civil) in nature and one that is punitive (or criminal): " 'If it is for civil contempt the punishment is remedial, and for the benefit of the complainant. But if it is for criminal contempt the sentence is punitive, to vindicate the authority of the court.' " *Hicks ex rel. Feiock v. Feiock*, 485 U.S. 624, 631 (1988) (quoting *Gompers v. Bucks Stove & Range Co.*, 221 U.S. 418, 441 (1911)). Because the purpose of a remedial contempt citation is to coerce compliance or "to compensate for losses or damages sustained by reason of noncompliance," the defendant's state of mind is not at issue. *McComb v. Jacksonville Paper Co.*, 336 U.S. 187, 191 (1949) ("The absence of wilfulness does not relieve from civil contempt. . . . Since the purpose is remedial, it matters not with what intent the defendant did the prohibited act"). In contrast, the defendant's state of mind is relevant in the case of criminal contempt. *United States v. United Mine Workers of Am.*, 330 U.S. 258, 303 (1947) ("In imposing a fine for criminal contempt, the trial judge may properly take into consideration the extent of the willful and deliberate defiance of the court's order . . . ").

The Court has cautioned that "[c]ontempts are neither wholly civil nor altogether criminal," but may " 'partake of the characteristics of both.' " *Gompers*, 221 U.S., at 441 (quoting *Bessette v. W.B. Conkey Co.*, 194 U.S. 324, 329 (1904)). It is clear, however, that a contempt adjudication for violation of a decree like the one in *Wyoming v. Colorado* is not primarily remedial or compensatory in nature. The Court observed in *Wyoming v. Colorado* that the issue of whether the plaintiff State has been injured by a violation of the Court's decree is irrelevant to whether the defendant State should be adjudged in contempt. 309 U.S., at 581 ("*After great consideration*, this Court fixed the amount of water from the Laramie river . . . to which Colorado was entitled. . . . *Colorado is bound by the decree* . . . and is not entitled to raise any question as to injury to Wyoming . . . ") (emphasis added); see also *Nebraska v. Wyoming*, 507 U.S. 584, 592 (1993) (plaintiff State seeking enforcement of decree of equitable apportionment "need not show injury").

Thus, when a finding of contempt depends on the defendant's willful and deliberate defiance of the Court's authority, it is only logical to take account of an extenuating circumstance, such as the defendant's "uncertainty" and "misunderstanding." *Wyoming v. Colorado*, 309 U.S., at 582. But when the matter at hand is compensation, the defendant's innocent intentions are irrelevant, as is its plea that it acted in good faith. *McComb*, 336 U.S., at 191; accord *City of Milwaukee*, 515 U.S., at 197; *Texas v. New Mexico*, 482 U.S., at 129.

Colorado cites one additional case, *Talbot v. Seeman*, 1 Cranch 1, 44 (1801), in support of its contention that the

Court should reduce Kansas' damages "by some fair percentage" on account of Colorado's ignorance of its breach. Colo. Brief 37. In *Talbot*, the United States ship of war the Constitution recaptured the Amelia, a vessel owned by a citizen of Hamburg, from French captors. Captain Talbot, who was in command of the Constitution, brought suit for condemnation of the Amelia or for payment of salvage upon restoration to its owner. *Talbot*, 1 Cranch, at 27. Salvage was "a compensation for actual service rendered to the property charged with it" and was "demandable of right for vessels saved from pirates, or from the enemy." *Id.*, at 28. The circuit court ordered the Amelia restored to its owner without payment of salvage on the grounds that Hamburg was not at war with France and that the captain and crew of the Constitution thus did not perform any compensable service by recapturing a vessel from a neutral power. *Id.*, at 3-4, 27. This Court reversed, holding that the Amelia was recaptured from the French, who were in a state of partial war with the United States, and that salvage in the amount of one-sixth of the value of the vessel and its cargo should therefore be paid. *Id.*, at 44.

It is unclear what significance Colorado attributes to the decision in *Talbot*. This Court did not, as Colorado apparently would have it, reduce the compensation payable to the plaintiff in response to a claim of extenuation. On the contrary, the Court, in reversing a denial of salvage, directed that Captain Talbot and his crew should indeed be compensated for the services that they had rendered. *Id.*, at 44-45. In determining the amount of salvage to be paid, the Court did not opine that full compensation "is fundamentally unfair," Colo. Brief 28,

but that, in the absence of an applicable statute, one-sixth of the value of the vessel and its cargo was a just estimate of full compensation on account of "the danger from which the recaptured was saved, and of the risk attending the retaking of the vessel." *Talbot*, 1 Cranch, at 44.[4]

In sum, none of the cases cited by Colorado is authority for its contention that its claim of extenuation should be considered in determining an adequate remedy for its breach of the Compact. In the absence of such authority, this Court should not afford Kansas less than full compensation.

IV. KANSAS SHOULD BE ALLOWED PREJUDGMENT INTEREST AT RATES ADEQUATE TO COMPENSATE IT FOR ITS LOSS.

The Special Master recommended that Kansas' damages should include prejudgment interest at the rates proposed by Kansas. 1 Third Report 107, 120 (¶ 8). As the Special Master recognized, one of the determinants of an interest rate is opportunity cost, which represents the foregone "opportunity to invest and earn from" funds

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[4] The award of compensation was not necessarily identical to what the Court might have awarded had a statute applied. One statute, applicable to salvage payable upon recapture of an American vessel from an enemy, specified that an award of salvage should be set at between one-eighth and one-half of the value of the vessel and its cargo. *Id.*, at 30, 43. This Court in no way suggested, however, that the compensation payable to Captain Talbot and his crew was being reduced "by some fair percentage," Colo. Brief 37, or that one-sixth of the value of the Amelia and her cargo was anything less than full compensation for the services rendered.

withheld. *Id.*, at 91. Kansas' economists proposed two sets of interest rates: one used to calculate interest on losses to water users, reflecting a relatively high opportunity cost to farmers and other individual water users; and another used to calculate interest on tax losses to the State of Kansas, reflecting the State's lower opportunity cost. See *id.*, at 94. The Special Master noted that Kansas' economists had "carefully developed" the proposed rates, and that Colorado had offered no evidence at all to controvert them. *Id.*, at 91. Indeed, Colorado's response to Kansas' proposed interest rates has been limited to argument of counsel in post-trial briefing.

Colorado excepts to the Special Master's recommendation on the ground that any prejudgment interest awarded to Kansas should be calculated on the basis of the State's lower opportunity cost rather than the opportunity cost actually incurred by its water users. Colo. Brief 38-41. Colorado's rationale is a reprise of its Eleventh Amendment argument. It reiterates that Kansas does not legitimately represent the interests of its water users, such that affording Kansas a recovery based in part on losses to its water users is tantamount to allowing Kansas "simply [to] advanc[e] individuals' claims." *Id.*, at 39-40. While acknowledging that Kansas' water users did indeed incur a higher opportunity cost on the foregone use of funds owed as damages, Colorado nevertheless argues that to provide a remedy for that higher cost would be "punitive and unfair to Colorado." *Id.*, at 39.

The answer to Colorado's Eleventh Amendment argument remains the same. The Arkansas River Compact makes clear that Kansas does properly represent the interests of its water users, inasmuch as the term "State"

expressly includes the State's water users. Art. VII-A, Kan. Brief A-10 to A-11; see Point I.B, *supra*. The decision in point, *Texas v. New Mexico*, likewise confirms that a State's action to enforce the interests of "those users who have suffered the water shortages," or "those who were hurt," is "of such general public interest that the sovereign State [is] a proper plaintiff." 482 U.S., at 131-132 & n. 7.

Colorado points out, however, that, in accordance with *Texas v. New Mexico*, 482 U.S., at 132, n. 7, the State of Kansas rather than its individual water users should recover any damages that may be awarded, to be spent as it determines is in the public interest. Colo. Brief 39. Colorado perceives an inconsistency in allowing a recovery to the State that is based to any extent on losses to water users. *Ibid.* The inconsistency disappears, however, when one recognizes that Kansas receives a remedy, just as it brought this action, as a representative of a general public interest that is sufficiently broad to embrace the interests of its water users. See *Texas v. New Mexico*, 482 U.S., at 131-132 & n. 7.

In another variation on the theme, Colorado protests that, had it tendered a damages payment to Kansas at some earlier point in this litigation, the tendered monies would have accrued interest at rates applicable to the State rather than to individual water users. Colo. Brief 40-41. It contends that awarding interest at the rates at which water users actually lost use of the monies withheld "is punitive rather than compensatory." *Id.*, at 41. But Colorado's hypothetical scenario takes for granted that Kansas would retain the tendered monies in the state treasury rather than distributing it to those users who

had suffered the water shortages. Had Kansas had the opportunity to take the latter course (which it surely could determine was in the public interest, see *Texas v. New Mexico*, 482 U.S., at 132, n. 7), it could have averted the harm to its water users, in the form of lost use of funds, for which Colorado now seeks to escape liability. Under such a scenario, interest would have accrued at the very rates Kansas has proposed.

Colorado similarly asserts that it did not earn interest at individual water users' rates on money that will be used to pay damages. Colo. Brief 41. It neglects to acknowledge, however, that its own water users did indeed accrue high rates of income from their use of water that properly belonged to Kansas. The Special Master excluded from evidence Kansas' estimate of the benefits that Colorado and its water users realized as a result of breaching the Compact. 1 Third Report 2-3. He noted, however, that "we should not be oblivious to Colorado's use of the water over this long period of years." *Id.*, at 101. The Special Master's concern was well-founded. Colorado and its water users are subject to the terms of the Compact, as are Kansas and its water users. Art. VII-A, Kan. Brief A-10 to A-11. Thus, it is hardly punitive to expect Colorado to make Kansas and its water users whole, especially in view of the substantial profits that Colorado and its water users have derived from their breach of the Compact. See, *e.g.*, *General Motors Corp. v. Devex Corp.*, 461 U.S. 648, 655 n. 10 (1983) ("A rule denying prejudgment interest not only undercompensates the [plaintiff] but also may grant a windfall to the [defendant] and create an incentive to prolong litigation"); *In re Oil Spill by the Amoco Cadiz*, 954 F.2d 1279, 1332 (7th Cir. 1992) (per curiam) ("An injurer allowed to keep the return on this money has profited by the wrong").

V. THE MASTER'S RECOMMENDATION ON CROP LOSSES IS REASONABLE AND SHOULD BE ACCEPTED.

Colorado's fourth and last exception challenges the Special Master's reliance on the "crop yield-evapotranspiration relationships used by the Kansas experts." Colorado Exceptions 2 (¶ 4). Colorado's argument in support of the exception, however, addresses the Kansas crop yield-evapotranspiration relationships only obliquely. Stating that it "will not trouble the Court to review the testimony on the technical issues," Colo. Brief 44, Colorado argues that the values reached in that analysis are simply too high when compared with the low cost of obtaining groundwater and with other values for water obtained from a literature review. *Id.*, at 41-49. Additionally, Colorado challenges the Special Master's reference to a value determined by a Colorado expert that was higher than the Kansas values. *Id.*, at 47-48. Colorado concludes that the Special Master's crop loss values are "unreasonable and inequitable." *Id.*, at 49.

There are, in fact, as discussed below, a number of good reasons why the Special Master reached the conclusions that he did. In essence, Colorado is arguing that the number of new large capacity wells installed over the period 1950-1977 in the canal service areas in Kansas should have been more than the 336 such wells actually installed if the value of crop losses were as high as the Kansas experts and the Special Master determined. Yet

Colorado introduced no evidence to that effect. Colorado has simply argued the point without any basis in the evidence. For instance, Colorado did not even attempt to analyze how many wells should have been drilled under its theory. And the Colorado literature review compared the Kansas values to values derived in other studies that the Colorado expert himself admitted were *not comparable*, making the comparison essentially worthless. Additionally, the value of water separately determined by a Colorado expert and referenced by the Special Master was developed for purposes of this case and was considered, if anything, too low in relation to what could be expected in the Arkansas River Basin.

A. Kansas' Evidence on Crop Losses

Three experts testified for Kansas on crop losses. Each expert is eminent in his field. Professor Norman Whittlesey is a recently retired professor of agricultural economics with more than 30 years in that position and a fellow of the American Agricultural Economics Association. His qualifications are further summarized by the Special Master. See 1 Third Report 14-15, n. 2. Eugene Franzoy is an agricultural engineer with many years of field experience in the very area of concern, crop yield response to water consumed by the crop. *Id.*, at 57 & n. 14; Second Report of Special Master, *Kansas v. Colorado*, No. 105, Orig., 24 (1997). On rebuttal, in response to Colorado's criticisms, Kansas called Professor Loyd Stone of Kansas State University. Professor Stone's significant qualifications are summarized by the Special Master. 1 Third Report 50, n. 11, 56. Professor Stone was described by one Colorado expert as "a prominent soil scientist."

Colo. Exh. 1085, at 10. Research by Professor Stone was relied upon by Professor Whittlesey in developing the crop yield-evapotranspiration (ET) relationships applicable to this case.

In the preparation of the economic analysis, Professor Whittlesey made a number of visits to the Arkansas River Valley in Kansas and conducted telephone interviews with farmers there. He determined through interviews with farmers that the crops in the surface-water-only areas were alfalfa, winter wheat and grain sorghum. Colorado did not disagree with this determination. 1 Third Report 46. The States agreed to the amount of consumptive use by the crops, known as ET, for each year of violation by Colorado. *Id.*, at 7-9, 46; 2 Third Report, App. 86, col. v.

It is widely accepted that once the amount of evapotranspiration by a crop is known, the yield can be determined according to a linear relationship of the form y=mx+b, where "y" is the yield and "x" is the amount of water taken up, *i.e.*, consumed, by the crop (ET). The "b" factor is not relevant for incremental determinations of yield response to water. The slope "m" of the straight line represented by this equation is the coefficient that relates additional water consumed by the crop to additional crop yield. The Kansas experts cited and discussed no less than 16 texts and peer-reviewed articles in professional journals supporting the linearity of the relationship between crop yield and ET. 1 Third Report 47. The Kansas experts also relied on personal research and field experience that confirmed the linearity of the relationship and the coefficient of relationship between ET and crop yield for each crop. Even Colorado's expert admitted that the

linear relationship "has 'long been understood.' " *Ibid.* And as the Special Master explained, the exact coefficient of relationship between yield and ET, the slope "m" of the linear relationship, was carefully chosen for each crop to reflect field conditions. See 1 Third Report 49-52, 56.

B. Colorado's Evidence on Crop Losses

Two Colorado experts attempted to directly refute the Kansas analysis. These were Associate Professor Dennis Wichelns who had recently become a tenured professor of agricultural economics, see 1 Third Report 15, n. 3, and Grant Cardon, a relatively new associate professor, see *id.*, at 55 & n. 13. A third Colorado expert, Richard Adams, has been a full professor of agricultural economics for a number of years. *Id.*, at 62 & n. 16. A fourth Colorado expert, James Lochhead, was formerly Director of the Colorado Natural Resources Department. *Id.*, at 63-64, 108, n. 29.

Colorado sought to challenge the Kansas evidence on crop losses on a number of different legal and factual grounds. Colorado asserted that Kansas should have drilled even more wells than had been drilled in order to mitigate the damages that were being sought from Colorado. The Colorado evidence on mitigation was excluded by the Special Master. 2 Third Report, App., 68-75. Professor Wichelns, in connection with his mitigation analysis, asserted that more wells should have been drilled if the value of the crop losses was as high as indicated by the Kansas evidence. Professor Adams also supported this view.

Colorado's primary challenge to the Kansas evidence was Professor Wichelns' development of a series of non-linear equations to describe the yield-ET relationship. He decided, however, to withdraw his non-linear analysis in the middle of cross-examination on the basis that his "data were 'not reliable' for the purposes for which he had used them." 1 Third Report 53-54. He had, as described by the Special Master, failed to realize the fundamental error of using data that were clearly unsuited for the use he was attempting to make of them. *Ibid.* That is, Professor Wichelns had attempted to create a non-linear relationship between crop yield and ET on the basis of data from experiments where more water was put on the crop than the crop could use. He then attempted to apply non-linear equations that he had developed from the excess-water data to the water-deficit conditions of the Arkansas River Valley in Kansas. See *id.*, at 53-55. This was done despite the fact that he was fully aware of the water-deficit situation there. The States had previously stipulated, as a basis for the work of the economists, that there were water shortages in Kansas every year even aside from Colorado's Compact violations. *Id.*, at 46; 2 Third Report, App. 86, col. k. Indeed, Colorado counsel state in the current briefing that the surface-water-only lands "were not just occasionally short of water, they were water short every year." Colo. Brief 47, n. 14. It was therefore surprising that Professor Wichelns would attempt to apply equations based on excess-water data to the Arkansas River Valley in Kansas.

In the wake of the withdrawal of his primary analysis using non-linear equations, Professor Wichelns, over

Kansas' objection, expressed a number of new opinions that were not included in his original expert report. 1 Third Report at 59. These opinions purported to raise questions about the validity of the regression analyses used by researchers in the peer-reviewed literature to determine the linear relationship between crop yield and ET. The Special Master described these supplemental opinions as highly technical, but "substantively refuted by Professor Stone." *Ibid.* Colorado incorrectly suggests that the summary dismissal of the supplemental opinions was indicative of the Special Master's analysis of all of Colorado's objections. See Colo. Brief 44. In fact, the Special Master fully explained in his Third Report the careful consideration given to all of Colorado's substantive objections to the Kansas evidence. 1 Third Report 45-64.

Professor Adams limited himself to providing a literature search for studies of water values that could be compared to the value derived from the Kansas analysis. He provided an extremely short report, Colo. Exh. 1203. See Colo. Brief A-28 to A-39. Unfortunately, none of the studies that he located in his literature search turned out to be comparable to the values in the Kansas analysis. He agreed on cross-examination that comparable values would be higher than the values analyzed in his report.[5]

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[5] Water values differ depending on what development costs are accounted for. There are three "time horizon" categories recognized by agricultural economists, namely, long run, short run, and short-short run (intraseasonal). Professor Adams admitted that the Kansas values in this case are short-short run values. 1 Third Report 63. The studies reviewed by Professor Adams were either long run or short run values and

Moreover, Professor Adams stated that the values he had found in the literature did not represent sales of water, that he was not "using real world exchanges of money for water," and that he was using "mostly computer studies" for comparison. RT Vol. 200 at 81-84 (A-3 to A-6, *infra*).

C. The Special Master's Analysis of the Evidence on Crop Losses

The Special Master carefully described the evidence presented by both States on crop losses and fully explained his reasoning in resolving the evidentiary issues. 1 Third Report 45-61. The Special Master recognized the benefits of the agreement that the States had been able to reach on underlying factual issues. The parties were in agreement for each year 1950-1994 on the amount of consumptive use by the crops (ET) that would have occurred but for Colorado's Compact violations, the crop mixes, the crop prices, and the crop water deficits. *Id.*, at 46.

The Special Master then reviewed the evidence on the linearity of the relationship between crop yield and ET, analyzing the equation and the values used in the equation for each of the three crops, namely, alfalfa, winter wheat and grain sorghum. He noted that the value of the slope of that relationship for each crop was adjusted to make it applicable to field conditions. He reviewed

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therefore not comparable to the values that are relevant in this case. *Ibid.* Long run values are lower than short run values, and short run values are lower than short-short run values. See Kan. Exh. 1070 (A-8, *infra*); RT Vol. 203 at 103-108 (Prof. Whittlesey) (A-20 to A-26, *infra*).

Colorado's alternate approach using non-linear equations, which was ultimately withdrawn. He also analyzed in detail the Colorado objections to the Kansas analysis, pointing out the indicia of reliability associated with the Kansas analysis and the lack of foundation for the claim by Colorado that the otherwise linear relationship becomes non-linear under field conditions. *Id.*, at 56 (noting that neither Colorado expert could cite a single journal article to support Colorado's position). He also considered other objections to the linearity of the relationship. *Id.*, at 57-59.

Most importantly for the objections that Colorado continues to press at this stage of the proceedings, the Special Master analyzed the argument by the Colorado experts that more wells should have been drilled if the crop loss values were as high as the Kansas analysis showed. The Master, relying on testimony responding to the Colorado position by Professor Peter Barry, Kansas' "preeminent" expert on agricultural finance, 1 Third Report 40-41 & n. 8, pointed to a number of reasons, unrelated to crop values, why such wells would not have been drilled, *id.*, at 60-61, drawing into question the validity of the Colorado comparison of groundwater costs and crop losses.

The Special Master also addressed the claim by Professor Adams that his literature review had shown the Kansas values to be too high. Of great significance to the Special Master's analysis, and properly so, was Professor Adams' acknowledgment on cross-examination "that the literature values he reported were not 'comparable to the values that are relevant in this case.' " *Id.*, at 63. Colorado challenges the Special Master's statement by asserting

that Professor Adams testified "that whether the 'intraseasonal' values would be higher was an empirical question. RT. Vol. 200 at 121-122 (Colo. App., Item No. 5)." Colo. Brief 47 (footnote omitted). Colorado fails to point out, however, that when Professor Adams returned to the stand on sur-rebuttal, he clarified that "conceptually I would agree that the intraseasonal would be higher than the short run, which would be high r than the long run," but that he didn't know how much higher. RT Vol. 208 at 98-99 (A-10 to A-11, *infra*).

Colorado also asserts that the comparison by Professor Adams was appropriate because the studies in the literature that he had found "were based on well water, which would be higher than the value of *unregulated* surface water in Kansas." Colo. Brief 47 (emphasis added). First, Professor Adams was uncertain of the extent to which the studies he had found involved groundwater. See Colo. Brief A-79. Second, the surface water in Kansas is highly regulated through storage in John Martin Reservoir and release to the Kansas canals on demand. 1 First Report of Special Master, *Kansas v. Colorado*, No. 104, Orig., 45-47. The lead Kansas economist, Professor Whittlesey, also testified that the values that Professor Adams sought to compare to the Kansas values were not comparable and would be expected to be lower than the Kansas values. RT Vol. 203 at 103-108 (A-20 to A-26, *infra*).

The Special Master also considered a value for water that was determined by the Colorado expert James Lochhead on the basis of a land-fallowing project in the Palo Verde Irrigation District in California, which was conducted to provide water to the Metropolitan Water

District of California. The value as determined by Mr. Lochhead was higher than the Kansas value. Moreover, Mr. Lochhead confirmed a memorandum that he had written for purposes of this case in which he had identified the higher value and commented that even it might not be as high as one would expect in the Arkansas Basin: "Assuming similar program costs, the cost of water in the Arkansas Basin may be higher, since growing season and annual consumptive use per acre are less." RT. Vol. 211, at 95-96 (A-25 to A-26, *infra*). Mr. Lochhead's analysis was based on an actual sale of water; it was a real world exchange of money for water.

Colorado criticizes the Special Master's reliance on Mr. Lochhead's analysis, contending that the price involved was for municipal rather than agricultural use. Colo. Brief 47-48. As support for this allegation, Colorado cites the testimony of Professor Adams which is reprinted in the Appendix to the Colorado Brief. A review of that transcript, however, reveals that there is no support for Colorado's distinction between water uses. The transcript does not even mention the transaction referred to in the text of the Colorado Brief.[6] Indeed, Professor Adams

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[6] The cited testimony includes Professor Adams' acknowledgment that his values were not comparable to the Kansas values and a discussion of a different report of actual transactions introduced by Kansas that Professor Adams had not considered in his analysis and that the Kansas expert, Professor Whittlesey, had indicated would be comparable. The value shown under those conditions per acre-foot was $100-$175, versus the value of $109 per acre-foot in the Kansas analysis. See Colo. Brief A-72 to A-76. In this regard, it is significant that Professor Adams withdrew from consideration one of the principal reports on which he was relying, which he himself had authored. He withdrew it on cross-examination, admitting that it contained errors. See RT Vol. 208 at 99-106 (A-11 to A-18, *infra*).

never testified on the transaction for which Colorado cites his testimony.

In sum, the Special Master thoroughly addressed each of the Colorado criticisms of the work of the Kansas experts. In each instance, he found the Colorado criticisms unfounded and unpersuasive. Colorado's current attempt to resurrect some of those criticisms is similarly unavailing. On the basis of the Special Master's thorough and well-explained analysis of the agricultural, engineering and economic testimony on crop losses, the Court should approve the Special Master's recommendation on crop losses and overrule Colorado's exception.

CONCLUSION

The Exceptions of the State of Colorado to the Third Report of the Special Master should be overruled.

Respectfully submitted,

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Appendix Item 1

Excerpt from
RT Vol. 200
December 21, 1999
Direct Examination of Richard M. Adams

Direct Examination of Richard M. Adams
[RT Vol 200, Pages 81-84]

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NOW, I ALSO LOOKED AT – AS I MENTIONED, I LOOKED AT OTHER STUDIES BESIDES THE ONES REPORTED HERE, AND THOSE ARE DISCUSSED IN THE TEXT OF MY REPORT WHERE I MENTION SOME STUDIES THAT HAVE LOOKED AT, FOR EXAMPLE, LEASING OF WATER INTRASEASONALLY.

ONE OF THE STUDIES WE WERE DOING IN THE DESCHUTES RIVER BASIN – AS A PART OF THAT STUDY, ONE OF MY COLLEAGUES LOOKED AT HOW MUCH WE COULD LEASE WATER FROM FARMERS WHO GREW SOMEWHAT LOW-VALUE CROPS. AND THIS WOULD BE COMPARABLE TO THE RENTING THE WATER FROM THEM WITHIN A SEASON, WHICH IS SOMEWHAT COMPARABLE TO A SITUATION WHERE FARMERS MAY HAVE THE CROPS IN THE GROUND BUT THEN THEY'RE OFFERED THE OPPORTUNITY TO LEASE IT. SO THEY RENT THEIR WATER OUT.

AND IN THOSE STUDIES THEY FOUND – AND I SHOULD ACTUALLY SAY THESE ARE MODELS. THEY'RE NOT ACTUAL SITES, BUT THE MODEL EXERCISED SUGGESTED THAT SUBSTANTIAL AMOUNTS OF WATER COULD BE AVAILABLE FROM FARMERS AT $30.00 AN ACRE FOOT, MEANING THEY WOULD HAVE AN INCENTIVE TO GIVE UP THEIR WATER AND TAKE THAT MONEY AND FORGET

ABOUT FARMING IN THAT PARTICULAR YEAR.

SPECIAL MASTER: DO ANY OF THE STUDIES THAT YOU HAVE ON TABLE 1 REPRESENT SALES OF WATER?

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THE WITNESS: NO, THEY DO NOT, YOUR HONOR, AND THAT'S A VERY GOOD POINT. WHAT WE'RE TALKING ABOUT IN THESE TABLES ARE ECONOMISTS' ESTIMATES, USING THOSE TECHNIQUES THAT I DESCRIBED EARLIER WHERE ECONOMISTS TRY TO IMPUTE OR IMPLY A VALUE. AND IT'S THE SAME THING THAT'S BEING DONE IN THIS CASE. WE'RE NOT USING REAL WORLD EXCHANGES OF MONEY FOR WATER IN THAT SENSE.

BUT THERE IS EVIDENCE ON WHAT PEOPLE ARE WILLING TO PAY FOR WATER IN SIMILAR SITUATIONS SUCH AS THIS. AND THAT IS RELATED TO MY SECOND LINE OF INQUIRY IN TERMS OF COMMON SENSE AND WHAT THE REAL WORLD, PERHAPS, MIGHT SUGGEST IS A REASONABLE VALUE FOR THIS AREA.

SPECIAL MASTER: BEFORE WE LEAVE YOUR FIRST LINE OF REASONING HERE, CAN YOU TELL ME HOW ANY OF THESE STUDIES WERE DONE, THE WHEAT STUDY OR THE SORGHUM ONE OR THE ALFALFA ONE?

THE WITNESS: YES. THESE ARE DONE PRIMARILY WITH TWO DIFFERENT TECHNIQUES. THE WHEAT ONE, FOR EXAMPLE, WAS DONE WITH ONE OF THESE LINEAR PROGRAMMING TYPE OF MODELS

IN WHICH THEY CONSTRUCT A MODEL, IF YOU WILL, OF FARMING IN THE REGION, AND IN THAT MODEL THEY INCLUDE THE CROPS THAT COULD BE GROWN, THE YIELDS THAT COULD BE REALIZED, THE AMOUNT OF WATER AVAILABLE.

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THE WAY THE ECONOMISTS THEN USE THE MODEL IS TO SEE WHAT HAPPENS AS WE PRICE WATER AT DIFFERENT LEVELS AND WHICH CROPS FALL OUT. SO WHEN THE CROP FALLS OUT, MEANING IT'S NO LONGER PRODUCED IN THE MODEL, IT MEANS THAT THAT CROP CAN NO LONGER AFFORD TO PAY FOR THAT WATER. THE FARMER WOULD NOT GROW THAT CROP AS THE PRICE OF WATER IS INCREASED. AND THAT'S A FAIRLY COMMON TECHNIQUE. IN FACT, I THINK THE BULK OF THESE STUDIES FALL WITHIN THAT GENERAL HEADING OF USING VARIOUS FORMS OF LINEAR PROGRAMMING.

THERE ARE EARLIER STUDIES – AND I'M NOT SURE IF ANY OF THESE ARE OF THAT NATURE – THAT WOULD HAVE USED SIMPLE BUDGETING. THEY WOULD SAY A CROP GENERATES $200 IN REVENUE, AND IT GENERATES $30.00 IN PROFIT, AND IT TOOK TWO ACRE FEET OF WATER TO GROW THE CROP. THEREFORE, THE RETURNS TO THE WATER MIGHT BE $15.00 AN ACRE FOOT.

BUT MOST OF THESE STUDIES – AND I WOULD HAVE TO GO BACK AND [LOOK] AT THEM AGAIN – AND I DO HAVE THEM ALL AVAILABLE. BUT IF I RECALL, THE BULK OF THESE ARE LINEAR PROGRAMMING TYPE STUDIES.

SPECIAL MASTER: WELL, LET ME SEE IF I CAN PUT THIS IN LAWYER KIND OF LANGUAGE. IS IT AS SIMPLE AS SAYING, THEN, THAT THESE STUDIES REPRESENT I GUESS, MOSTLY COMPUTER STUDIES, BUT

STUDIES, ANYWAY, WHERE THE AUTHOR IS LOOKING AT THE POINT AT WHICH WATER IS SIMPLY TOO EXPENSIVE AND YOU WOULDN'T FARM IF YOU HAD TO PAY MORE THAN SOME FIGURE FOR WATER?

THE WITNESS: I THINK THAT'S A VERY GOOD WAY OF PUTTING IT, YOUR HONOR. WHAT WE FIND IS THAT THE LOW-VALUE CROPS DROP OUT FIRST. SO IF WE WERE MODELING A FARMER'S BEHAVIOR – JUST ONE FARMER – AND THIS FARMER COULD GROW ANYTHING FROM AVOCADOS TO WHEAT – AND WE KNOW THAT AVOCADOS OR CARROTS ARE A HIGH-VALUE CROP – THE NORMAL ECONOMIC REACTION WOULD BE AS WATER GOES UP IN PRICE, I'M GOING TO STOP GROWING THE WHEAT BECAUSE I CANNOT MAKE ANY MONEY GROWING WHEAT AT THAT PRICE. BUT I WOULD CONTINUE TO GROW SUGARBEETS, AND IF WATER GOT MORE EXPENSIVE AND I STOPPED GROWING SUGARBEETS, THEN I WOULD ONLY GROW COTTON. AND IF THAT WATER GOT PROGRESSIVELY MORE EXPENSIVE, THEN I WOULD HOPE TO BE ABLE TO GROW AVOCADOS OR ORANGES IF I HAD A CLIMATE THAT WOULD ALLOW THAT. BUT THAT'S THE GENERAL LOGIC THAT APPLIES HERE, AS YOU HAVE CORRECTLY STATED.

* * *

Appendix Item 2

Kansas Exhibit 1070

KANSAS EXHIBIT 1070

Time Horizon	Definition	Value of Water
Long Run	Net of development & crop production costs	Lowest
Short Run	Net only of variable costs of production	Middle
Short/Short Run	Net of marginal irrigation and harvest costs	Highest

Appendix Item 3

Excerpt from
RT Vol. 208
January 20, 2000
Cross Examination of Richard M. Adams

Cross Examination of Richard M. Adams
RT Vol. 208 at 98-106

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* * *

Q. IT'S ALSO YOUR TESTIMONY, IS IT NOT, THAT THE AMOUNT BY WHICH THE INTRASEASONAL VALUES WILL BE HIGHER THAN THE SHORT-RUN VALUES IS NOT KNOWN?

A. I BELIEVE I STATED IT WAS AN EMPIRICAL QUESTION

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AS TO WHETHER THE VALUE WOULD BE X DOLLARS OR Y DOLLARS HIGHER.

Q. BUT IT WOULD BE HIGHER, WOULDN'T IT?

A. IT COULD BE, OR THEY COULD POSSIBLY BE THE SAME, BUT THEY WOULD PROBABLY BE HIGHER, AND I BELIEVE I TESTIFIED TO THAT UNDER CROSS WHEN WE HAD THE – WHEN I WAS FIRST ADMONISHED BY THE MASTER FOR NOT PAYING ATTENTION TO HIM. I DON'T RECALL EXACTLY WHAT THE VISUAL WAS, BUT WE HAD A VISUAL UP THERE, AND I THINK WE TALKED ABOUT THIS. AND I DID STATE THAT CONCEPTUALLY I WOULD AGREE THAT THE INTRASEASONAL WOULD BE HIGHER THAN THE SHORT RUN, WHICH WOULD BE HIGHER THAN THE LONG RUN.

SPECIAL MASTER: I DON'T ADMONISH WITNESSES. I JUST REQUESTED THAT YOU TURN AROUND.

THE WITNESS: I'M SORRY.

MR. DRAPER: AND THE EXHIBIT, FOR THE RECORD, THAT WE WERE TALKING ABOUT AT THAT TIME IS PLAINTIFF'S EXHIBIT 1070, THE ONE THAT COMPARED THE LONG RUN AND SHORT RUN AND SHORT-SHORT RUN.

Q. NOW, ONE OF THE SOURCES THAT YOU ARE RELYING UPON FOR THE COMPARISONS THAT YOU ARE TESTIFYING TODAY TO IS THE PAPER THAT YOU DID WITH MR. CHO; ISN'T THAT RIGHT?

A. THAT IS ONE OF THEM THAT'S IN HERE. AS I STATED EARLIER, I AM NOT TYING THIS COMPARISON TO ANY

SPECIFIC VALUE IN THE LITERATURE, RATHER, I WAS LOOKING AT THESE VALUES FROM VARIOUS STUDIES AS AN INDICATOR OF THE RANGE OF VALUES THAT ONE MIGHT EXPECT FOR THESE TYPES OF CROPS.

Q. AND THAT IS ONE OF THE SOURCES THAT, AGAIN, IS NOT AN INTRASEASONAL OR SHORT-SHORT-RUN STUDY; CORRECT?

A. IT'S A SHORT-RUN SITUATION REFLECTING AN AREA WHERE FARMERS ARE SOMEWHAT WATER-SHORT.

Q. DO YOU HAVE A COPY OF YOUR REPORT? IT'S PLAINTIFF'S EXHIBIT 1018 [Richard M. Adams & Seong Hoon Cho paper].

A. NO, I DO NOT.

Q. (COUNSEL HANDS DOCUMENT TO WITNESS.)

A. THANK YOU.

Q. YOU MADE AN ANALYSIS THAT'S REPORTED IN THIS JOURNAL ARTICLE OF WATER VALUES; ISN'T THAT RIGHT?

A. THE PURPOSE OF THE PAPER WAS NOT TO ESTIMATE WATER VALUE BUT, RATHER, IT WAS TO TALK ABOUT CHANGES IN FARM PROFITS UNDER DIFFERENT LAKE LEVELS FOR KLAMATH LAKE, OREGON, BUT ONE CAN DERIVE WATER VALUES FROM THE ASSESSMENT, BUT THAT WAS NOT NECESSARILY THE PRIMARY PURPOSE. IT WAS TO LOOK AT THE TRADE-OFF BETWEEN WATER FOR ENDANGERED SPECIES AND AGRICULTURE.

Q. BUT YOU DID DETERMINE THE WATER VALUES IN THE COURSE OF YOUR STUDY, DIDN'T YOU?

A. THAT IS CORRECT. THERE ARE SOME WATER VALUES

REPORTED IN THIS STUDY.

Q. YOU LOOKED AT FOUR DIFFERENT KINDS OF FARMING OPERATIONS, DIDN'T YOU?

A. I DID – OR WE DID, ACTUALLY.

Q. IF WE LOOK AT TABLE 7, WHICH IS ON PAGE 2746, YOU –

A. YES, SIR.

Q. – SET OUT IN TABLE 7 THE CROP MIX AND THE CROPPED ACRES, IRRIGATION TECHNIQUES, AND OTHER INFORMATION REGARDING EACH FARM MODEL; ISN'T THAT RIGHT?

A. YES, THAT'S TRUE.

Q. I THINK YOU'VE TESTIFIED EARLIER THAT EITHER MODELS II OR III WOULD BE THE ONES THAT WOULD BE CLOSEST TO THE CROP MIX THAT WE ARE DEALING WITH IN THIS CASE; ISN'T THAT RIGHT?

A. I THINK NO. 3 WOULD BE CLOSER.

Q. ALL RIGHT. LET'S TURN OVER, THEN, TO THE NEXT PAGE, WHICH IS TABLE 8.

A. NOW, I SHOULD POINT OUT THERE'S AN ERROR IN THIS TABLE.

Q. OH, WHERE IS THAT?

A. IT'S IN COLUMN 3, FARM MODEL III.

Q. AND WHERE DOES THE ERROR APPEAR?

A. WELL, THE ERROR APPEARS – IF YOU START CALCULATING INCREMENTAL CHANGES IN WATER AND THE CORRESPONDING CHANGES IN PROFITS, THERE'S AN ANOMALOUS RESULT THAT I SHOULD HAVE CAUGHT, AND

I'M EMBARRASSED TO SAY THAT I HAVE AN ERROR IN ONE OF MY PAPERS. BUT IF YOU LOOK AT THE CHANGE IN THE VALUE OF WATER ACROSS INCREMENTS, IT GOES FROM $11 FOR ONE VERY SMALL AMOUNT OF WATER, AND IT JUMPS TO 200, AND

THEN IT DROPS TO 160, AND THEN FOR THE MOST SEVERE REDUCTION, IT FALLS BACK TO 97.

AS AN ECONOMIST I WOULD KNOW – I SHOULD HAVE CHECKED THIS, BUT YOU NEVER EXPECT TO SEE AN UPWARD-SLOPING DEMAND CURVE FOR A DRY DEMAND, AND THAT'S BASICALLY WHAT THIS WOULD IMPLY, IS THAT SOMEHOW AT A CERTAIN RANGE, THERE'S AN UPWARD-SLOPING DEMAND CURVE.

AND IN GOING BACK AND LOOKING AT THE SOLUTION PROCEDURE, THE LINEAR PROGRAMMING MODEL, WHAT HAPPENED ON THAT PARTICULAR PIVOT POINT, THERE WAS SUCH A SMALL AMOUNT OF WATER TAKEN AWAY, THE MODEL BASICALLY HICCUPPED. SO THOSE ANALYSES OF THE MARGINAL VALUE OF WATER FOR THOSE LAST THREE OR FOUR – PARTICULARLY THE ONE THAT GOES UP – THE TWO THAT GO UP ARE ANOMALOUS RESULTS AND WOULD VIOLATE ECONOMIC ASSUMPTIONS.

SPECIAL MASTER: ARE YOU TALKING ABOUT TABLE 7, PROFESSOR?

THE WITNESS: TABLE 8, I BELIEVE, YOUR HONOR. HE WAS ASKING ABOUT TABLE 8. AND THE REFERENCE, YOUR HONOR, IS TO THIS COLUMN

JUST UNDER "FARM MODEL III." AND ONE WAY THAT A PERSON COULD TEASE OUT SOME MARGINAL VALUES FOR WATER WOULD BE TO CHANGE THE PROFITS ALONG WITH THE CHANGE IN WATER.

NOW, THE LEFT-HAND SIDE OF THAT TABLE REPORTS DIFFERENT LAKE LEVELS, AND IT ALSO SHOWS THE CORRESPONDING CHANGE IN WATER AVAILABILITY IN THE NEXT COLUMN. SO YOU CAN DO A CALCULATION BY SEEING HOW MUCH WATER WAS TAKEN AWAY FROM THE FARMS AND CALCULATING THE CHANGES IN PROFITS.

AND WHAT YOU SEE IS OVER IN THE FIRST FOUR OR FIVE CHANGES, IF YOU WERE TO CALCULATE THIS, THESE WATER VALUES AND MARGINAL VALUE OF WATER IS ABOUT $15 TO $20 A FOOT. THEN IT SUDDENLY JUMPS TO 200. THEN IT FALLS TO 160, AND THEN IT FALLS FURTHER TO 97.

ECONOMIC THEORY SAYS THAT THIS VALUE SHOULD BE GOING UP CONSTANTLY AS WE REDUCE THE RESOURCE OF INTEREST HERE, WHICH IN THIS CASE IS WATER. SO AGAIN, IT'S AN EMBARRASSMENT THAT THE ONE ARTICLE THAT MADE IT BEFORE THE SUPREME COURT IS IN ERROR.

BY MR. DRAPER:

Q. WELL, YOU'RE NOT ALONE, IF THAT'S ANY COMFORT. LET'S TAKE A LOOK AT THE NO. 2 MODEL, WHICH IS RELATIVELY CLOSE. IT'S HAY AND PASTURE WITH FLOOD IRRIGATION.

A. THAT'S REALLY NOT CLOSE.

Q. MY RECOLLECTION WAS THAT EITHER MODEL II OR MODEL III WERE THE ONES THAT YOU CONSIDERED CLOSE TO OUR SITUATION HERE.

A. I DON'T BELIEVE I STATED THAT. I THOUGHT I WAS STATING MODEL III. MODEL II DOES NOT HAVE ANY CROP COMPARABLE TO WHEAT OR GRAIN SORGHUM IN THIS MIX.

Q. OKAY.

A. AGAIN, I THINK NO. 3 IS THE ONE THAT WOULD BE COMPARABLE. IT HAS BARLEY, WHICH IS A LITTLE MORE PROFITABLE, PERHAPS, THAN GRAIN SORGHUM. IT HAS WHEAT. IT HAS ALFALFA. AND IT ALSO HAS [*sic*] TO LOWER VALUE CROPS. I DON'T BELIEVE – AT LEAST IN MY OPINION, I DON'T CONSIDER II TO BE COMPARABLE.

Q. OKAY. LET'S TURN OVER, THEN, TO TABLE 10, WHICH IS ON THE SECOND TO LAST PAGE. IT'S PAGE NO. 2748. DO YOU SEE TABLE 10?

A. YES, SIR, I DO.

Q. THERE YOU LIST "MARGINAL WATER VALUE FOR MODELED FARMS UNDER DIFFERENT WATER SUPPLIES"; RIGHT?

A. CORRECT.

Q. SO WE CAN COMPARE THE VALUE OF WATER THAT YOU FOUND ASSOCIATED WITH EACH OF THE DIFFERENT FARMING MODELS, CAN'T WE?

A. WE CAN. BUT, AGAIN, FARM MODEL III, THAT CALCULATION IS NOT CORRECT.

SPECIAL MASTER: IS IT GOING TO BE

HIGHER OR LOWER?

THE WITNESS: IT WOULD BE LOWER.

SPECIAL MASTER: CAN YOU ESTIMATE BY WHAT PERCENTAGE? IS IT GOING TO BE A DOLLAR OR TWO OFF?

THE WITNESS: ACTUALLY, I DID THE CALCULATION. I BELIEVE IT COMES OUT TO BE – IF WE LOOK AT THE BASE CASE, 2.69, AND WE LOOK AT EVEN THE MOST EXTREME CASE, WHICH IS 1.69, IF WE TAKE AN ACRE FOOT AWAY FROM THAT FARM, I BELIEVE THE VALUE COMES OUT TO BE EITHER $56 OR $65 RATHER THAN 80. I DON'T HAVE MY CALCULATOR HERE, YOUR HONOR, BUT I DID CHECK THAT WHEN I DISCOVERED THIS OTHER ERROR.

SPECIAL MASTER: SO 80 IS GOING TO BE APPROXIMATELY WHAT THAT IS?

THE WITNESS: IT'S EITHER 56 OR 65, I BELIEVE, IN THAT RANGE.

BY MR. DRAPER:

Q. SO IT'S STILL HIGHER THAN THE MODEL II?

A. IT IS. BUT I – AND HAVING DISCOVERED THIS ERROR IN FARM MODEL III, I'M UNCOMFORTABLE WITH THIS TABLE. AGAIN, THAT'S WHY I TRIED NOT TO PIN ANY OF THESE – TO PIN MY ASSESSMENT OF THE REASONABLENESS OF THE KANSAS ESTIMATES ON ANY PARTICULAR EMPIRICAL STUDY.

EMPIRICAL STUDIES DO, UNFORTUNATELY, HAVE ERRORS THAT DON'T GET CAUGHT IN THE REVIEW

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PROCESS. THAT'S WHY I THINK IT'S IMPORTANT THAT WE LOOK AT A RANGE OF STUDIES AND A RANGE OF VALUES TO UNDERSTAND WHAT THE LIKELY VALUE OF WATER WOULD BE.

Q. ARE YOU WITHDRAWING YOUR ENDORSEMENT OF THIS [EXHIBIT] FOR PURPOSE[S] OF THIS CASE?

A. I THINK, GIVEN MY UNCERTAINTY ABOUT THESE NUMBERS AND GIVEN THAT I HAVE OTHER ESTIMATES IN THIS TABLE, I WOULD CHOOSE TO WITHDRAW THIS.

Q. ALL RIGHT. WELL, THAT WILL SAVE US A GOOD BIT OF TIME. IN FACT, I THINK WITH THAT, I AM FINISHED. NO MORE QUESTIONS.

REDIRECT EXAMINATION

BY MR. ROBBINS:

Q. WITHOUT RELIANCE ON THE ADAMS AND CHO PAPER, DO YOU FEEL THAT YOUR OPINION IS WEAKENED OR CHANGED IN ANY WAY?

A. ABSOLUTELY NOT.

Q. THANK YOU.

I HAVE NO OTHER QUESTIONS, YOUR HONOR.

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Appendix Item 4

Excerpt from
RT Vol. 203
January 12, 2000
Direct Examination of Norman K. Whittlesey

Direct Examination of Norman K. Whittlesey
[RT Vol. 200 at 103-108]

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Q. NOW, THE EVALUATION BY RICHARD M. ADAMS, IS THAT DEFENDANT'S EXHIBIT 1203?

A. YES.

Q. AND IN PLAINTIFF'S EXHIBIT 1017, DID YOU MAKE AN ANALYSIS OF PROFESSOR ADAMS' WORK?

A. YES, I DID.

Q. HOW DID YOU GO ABOUT DOING THAT?

A. WELL, PROFESSOR ADAMS' APPROACH TO HIS REPORT WAS TO COLLECT VALUES OF WATER FROM PUBLISHED LITERATURE OVER SOME HISTORIC PERIODS AND FROM VARIOUS REGIONS OF THE WESTERN UNITED STATES.

Q. HE DID A LITERATURE REVIEW?

A. IN ESSENCE, THAT WAS HIS REPORT. IT WAS A LITERATURE REVIEW INTENDED TO COMPARE WATER VALUES FROM THE PUBLISHED LITERATURE WITH THOSE WHICH HE DEVELOPED FROM THE MEASURE OF KANSAS DAMAGES FOR CROP LOSS FROM THE KANSAS REPORT.

Q. NOW, IN THE CROSS-EXAMINATION OF PROFESSOR ADAMS, HE AND I DEVELOPED WHAT IS MARKED AS PLAINTIFF'S EXHIBIT 1070. DO YOU HAVE THAT?

A. YES, I DO.

Q. WHAT IS THE RELEVANCE OF PLAINTIFF'S

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EXHIBIT 1070 TO THE ANALYSIS IN PROFESSOR ADAMS' REPORT?

A. IN A VERY ABSTRACT SENSE, WHAT IS SHOWN IN EXHIBIT 1070 IS AT LEAST THREE POSSIBLE MEASURES OF WATER VALUE THAT CAN BE DERIVED BASED ON, IN THIS CASE, THE DEFINITION OF TIME HORIZON, LONG RUN AND SHORT RUN AND WHAT'S CALLED A SHORT-SHORT RUN IN THIS CASE AND WHAT I REFERRED TO IN MY REPORT AS AN INTRASEASONAL SITUATION.

IN GENERAL, THE DEFINITION OF "LONG RUN" IN ECONOMICS IS THAT ALL COSTS ARE VARIABLE. SO WE'RE STARTING FROM A POSITION IN WHICH THERE ARE NO INVESTMENTS AND MAKING OR COLLECTING INFORMATION OR MAKING AN ANALYSIS ABOUT A DECISION, IN THIS CASE, PERHAPS REGARDING WHETHER TO IRRIGATE OR DEVELOP IRRIGATION.

AND SO IN SUCH A SITUATION, IF ONE IS CONSIDERING THE POSSIBILITY OF DEVELOPING A NEW IRRIGATION PROJECT IN THE DESERT, LET'S SAY, WHERE THERE'S NO CROPLAND AND NOTHING THERE THAT WE CAN, SAY, DRILL WELLS AND START IRRIGATING, WE HAVE TO CONSIDER AS THE RETURNS TO THE WATER, OR THE NET VALUE OF THE WATER, NOT ONLY ALL OF THE COSTS OF PRODUCTION – THE USUAL VARIABLE COSTS OF FERTILIZER AND MACHINERY AND SEED AND SO ON – BUT

ALL THE FIXED COSTS OF THE DEPRECIATION AND CAPITAL ASSOCIATED WITH MACHINERY AND IN ADDITION TO THE COST OF

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OBTAINING THE WATER.

NOW, THERE'S A COUPLE OF WAYS ONE CAN DO THAT. BUT NEVERTHELESS, WHAT WE'RE TALKING ABOUT IN THE LONG RUN IS A VALUE OF WATER THAT IS NET OF TOTAL COSTS, FIXED AND VARIABLE COSTS. AND BECAUSE WE ARE ACCOUNTING FOR WHAT SHOULD BE ALL COSTS IN THAT SETTING, WE WOULD EXPECT THE VALUE OF WATER TO BE LOWEST OF THOSE POSSIBILITIES THAT EXIST.

THE NEXT AND WHAT I CALL SHORT RUN AND WHAT IS LABELED AS SHORT RUN IN THIS CASE IS NORMALLY THAT WHICH IS OBSERVED IN THE LITERATURE AS DEVELOPED BY AN ECONOMIST WITH BUDGET STUDIES OR LINEAR PROGRAMMING OR NONLINEAR PROGRAMMING IN WHICH THE VARIABLE COSTS OF PRODUCTION OF CROPS ARE PART OF THE ANALYSIS AND HENCE BECOME SUBTRACTED FROM THE GROSS VALUE OF WATER FOR CROP PRODUCTION. AND IN THAT SENSE, WE GET WHAT IS LABELED AS A MIDDLE VALUE OF WATER OR SOMETHING THAT WOULD BE BETWEEN THE LOWEST AND THE HIGHEST.

THE SHORT-SHORT RUN, OR WHAT MIGHT BE VIEWED AND WHAT I TERM THE INTRASEASONAL SETTING, IS THAT OF – LET ME BACK UP AND SAY ONE MORE THING ABOUT THE SHORT RUN JUST SO

IT'S CLEAR. AND THAT IS THAT IN GENERAL WHAT THAT IMPLIES IS THAT THE QUANTITY OF THE WATER AVAILABLE TO THE FARM IS KNOWN AT THE BEGINNING

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OF THE SEASON SO THAT ALL DECISIONS ABOUT INPUT COSTS ARE ABSOLUTELY KNOWN AND THAT ONE CAN THEN OPTIMIZE, IN ECONOMIST'S TERMS, THE USE OF THAT WATER IN DERIVING THE HIGHEST POSSIBLE VALUE IN CROP PRODUCTION.

AND THE SHORT-SHORT RUN, OR THE INTRA-SEASONAL CASE, WE ARE TALKING ABOUT THE CONDITIONS THAT EXISTED IN WESTERN KANSAS IN THE DITCH SERVICE AREA WHERE CROPS WERE ESTABLISHED, CROPS WHICH WERE DROUGHT TOLERANT IN LARGE PART – WHEAT, SORGHUM, AND ALFALFA – BUT WOULD ALWAYS RESPOND TO WATER. AND WE'RE DESCRIBING THE INCREMENT OF YIELD THAT WOULD HAVE BEEN ACHIEVED IF THE WATER WERE APPLIED TO THESE GROWING CROPS.

SO WE ARE NOT CONCERNED ABOUT THE EFFECTS OF THE VARIABLE OR THE FIXED COSTS BECAUSE THE CROP IS ALREADY THERE. THE ONLY MARGINAL COSTS THAT BECOME RELEVANT AT THIS POINT ARE THOSE ASSOCIATED WITH THE APPLICATION OF THE ADDITIONAL WATER, OR THE IRRIGATION COST, AND THE ACCOUNTING FOR THE HARVEST OF THE ADDITIONAL CROP. SO IN THIS CASE, WE ARE GOING TO SUBTRACT FROM GROSS

REVENUE ONLY THE MARGINAL COSTS ASSOCIATED WITH THAT INCREMENT OF WATER AND PRODUCTION. AND IN THIS CASE, WE WOULD GET THE HIGHEST VALUE OF WATER IN THE RANGE OF THE THREE THAT WE DESCRIBED HERE.

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Q. IN MAKING COMPARISONS WITH REGARD TO WATER VALUES, IS IT IMPORTANT TO KNOW WHICH TIME HORIZON YOU'RE DEALING WITH IN EACH CASE?

A. YES, IT IS. AND IT WOULDN'T, FOR EXAMPLE, BE APPROPRIATE TO USE A LITERATURE VALUE FOR A SHORT-RUN OR A LONG-RUN CONDITION OR SET OF ASSUMPTIONS AND THEN SAY THAT THAT COMPARES TO THE INTRASEASONAL VALUE THAT WE ARE ASSESSING IN THIS CASE.

THE INTRASEASONAL VALUE IS NOT UNLIKE – I BELIEVE I HEARD THE LANGUAGE IN THE COURT HERE AT SOME POINT IN REVIEW OF SOME ARTICLE ABOUT WATER VALUE IN CALIFORNIA THAT WAS NEEDED TO FINISH THE CROP, AND IT HAD A VERY HIGH VALUE. I DON'T REMEMBER WHICH IRRIGATION WE WERE TALKING ABOUT OR WHO WAS TALKING ABOUT IT. BUT THAT'S THE NATURE OF WHAT WE'RE TALKING ABOUT HERE IS GETTING MORE OUT OF THE EXISTING CROP.

Q. DID YOU ANALYZE PROFESSOR ADAMS' REPORT, DEFENDANT'S EXHIBIT 1203, TO DETERMINE WHETHER ANY OF THE VALUES THAT HE REPORTED THERE WERE COMPARABLE TO THE

INTRASEASONAL VALUES THAT WE ARE DEALING WITH IN THIS CASE?

A. YES, I DID.

Q. LET ME ASK YOU TO TURN TO TABLE 1 IN DEFENDANT'S EXHIBIT 1203. THAT'S JUST AFTER PAGE 9.

SPECIAL MASTER: TABLE 3?

MR. DRAPER: TABLE 1.

Q. DOES THIS TABLE SHOW SOME OF THE SOURCES THAT PROFESSOR ADAMS COLLECTED?

A. YES, IT DOES.

Q. DID YOU DETERMINE WHETHER ANY OF THE SOURCES CITED FOR THE WATER VALUES ASSOCIATED WITH WHEAT, GRAIN SORGHUM, OR ALFALFA – DID YOU DETERMINE WHETHER ANY OF THOSE WERE COMPARABLE TO THE INTRASEASONAL TIME HORIZON THAT WE'RE DEALING WITH IN THIS CASE?

A. YES. I DID REVIEW ALL OF THE LITERATURE THAT IS REPRESENTED BY THE CROPS AND THEIR RESPECTIVE VALUES IN THAT TABLE. AND IN ALL CASES BUT ONE, THE VALUES WERE REPRESENTATIVE OF WHAT I WOULD DESCRIBE AS SHORT RUN WITH ONLY ONE – AND THEN A – ACTUALLY, LET'S SEE. LET ME BE SURE I DON'T MISSPEAK. YEAH, THAT'S TRUE. AND THEN THE ONE VALUE – THERE'S ONE SET OF VALUES OR ONE REFERENCE FROM WASHINGTON STATE UNIVERSITY THAT

RELATED TO AN IRRIGATION DEVELOPMENT PROJECT IN SOME NONIRRIGATED PARTS OF THE STATE THAT WOULD HAVE TO BE DESCRIBED AS A LONG-RUN VALUE.

SO IN SUMMARY, ALL OF THE VALUES IN THE TOP HALF OF THIS TABLE RELATING TO WHEAT AND SORGHUM AND ALFALFA ARE OF A NATURE WHICH WOULD NOT BE DIRECTLY COMPARABLE TO THOSE BEING DETERMINED OR THE TYPE OF ANALYSIS BEING CARRIED OUT IN THE KANSAS CASE.

Appendix Item 5

Excerpt from RT Vol. 211
January 25, 2000
Cross Examination of James S. Lochhead

Cross Examination of James S. Lochhead
[RT Vol. 211 at 95-96]

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Q. I'D LIKE TO SHOW YOU WHAT WE'VE MARKED AS PLAINTIFF'S EXHIBIT 1089. THIS IS A MEMORANDUM WRITTEN BY YOU, IS IT NOT?

A. YES, IT IS.

Q. THIS WAS WRITTEN IN CONNECTION WITH YOUR ANALYSIS FOR PURPOSES OF THIS CASE?

A. THAT'S CORRECT.

Q. WOULD YOU READ THE SECOND PARAGRAPH OF THE MEMORANDUM, PLEASE.

A. THE SECOND NUMBERED PARAGRAPH OR SECOND OVERALL?

Q. THE SECOND PARAGRAPH ON PAGE 1.

A. "THE PVID PROGRAM IS GENERALLY REPORTED AS BEING SUCCESSFUL FROM AN ADMINISTRATIVE, FINANCIAL, AND ECONOMIC STANDPOINT. MWD PAID A TOTAL OF $26.6 MILLION FOR 185,978 ACRE-FEET OF WATER OVER A TWO YEAR PERIOD, OR $143 PER ACRE-FOOT OF WATER PER YEAR. ASSUMING SIMILAR PROGRAM COSTS, THE COST OF WATER IN THE ARKANSAS BASIN MAY BE

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HIGHER, SINCE GROWING SEASON AND ANNUAL CONSUMPTIVE USE PER ACRE ARE LESS."

Q. DID YOU DO ANY FURTHER INVESTIGATION OF THE PRICE ASPECT OF THE WATER BANK?

A. NO. AND, IN FACT, I REALLY DIDN'T DO ANY INVESTIGATION OF THE PRICE ASPECT OF THE WATER BANK.

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